

COST *and* MANAGEMENT

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OF THE

CANADIAN SOCIETY OF COST
ACCOUNTANTS

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Telephone Elgin 8914

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Extra copies of this journal may be obtained at 50c each to members
and \$1 each to non-members.

COST AND MANAGEMENT

Report of President and Directors

(Presented at Annual Meeting, Montreal, March 29, 1928.)

THE year just closed has been one of progress for the Society, and we feel that some addition has been made to the knowledge and practice of cost accounting in Canada. We are especially hopeful that the steps taken during the year lay a foundation for future growth.

Our membership at the close of the year stands as follows:—

	Senior	Junior	Total
Toronto Chapter	90	13	103
Montreal Chapter	76	12	88
Hamilton Chapter	27	16	43
Elsewhere	46	—	46
	239	41	280

In the previous year, when our affiliation with the National Association of Cost Accountants was dropped, and other important changes in policy took place, there was some loss in membership. This loss has been nearly all recovered, however, and from the interest in the Society shown by the present members and by others we can reasonably hope that by active work the membership may be extended.

In spite of this decrease in membership we are pleased to report that we have a financial surplus for the year in contrast to the deficit in the preceding year. The business of the Society has, we hope, been economically and efficiently conducted, and expenditures have been kept at a minimum.

During the year permanent headquarters for the society were established in Toronto, and an editor and manager engaged to attend to the general business, publications and other work of the Society. The membership and other records have been put in good order, and the mailing list and the lists in the hands of the Chapters are revised each month.

Our monthly publication, "Cost and Management," has proved suitable to the needs of the Society. It is planned

REPORT OF PRESIDENT AND DIRECTORS

to have the issue mailed to reach the members about the 15th of each month, each issue containing some educational material developed in our own Society or obtained from other sources, and a brief record of the activities of the various chapters.

Chapter Programmes

The Executives of our three Chapters gave careful thought to their programme for the current season, and their work has met with splendid response on the part of the members.

The Annual Convention

The second annual convention, held in Montreal, was, of course, the outstanding educational feature of the year. The sessions were held in McGill University and in L'Ecole des Hautes Etudes Commerciales, through the courtesy of these institutions. The addresses were given in both English and French, and the attendance of 130 was representative of both races. No steps have been taken to organize a convention for 1928, this being left to the judgment of the new Executive.

Examination Plan

Consideration of examinations and the issue of certificates to candidates qualifying occupied the attention of your Executive during the year. A plan was finally adopted, as described in Cost and Management for January. Members now have the opportunity of qualifying for these certificates, and it is hoped that there will be a good response. The Chapter Executives have also taken steps to assist in the educational work by arranging for courses in the subjects specified.

Plans for the Coming Year

These steps, we hope, lay a foundation for growth in the future, and make it possible to increase our membership. Plans have been made for increasing the usefulness of the Society to its members in various ways, and to make the work of the Society more widely known, so that membership may be increased. We trust that the members as a whole and individually will co-operate with your new Executive in these plans.

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ANNUAL MEETING OF THE SOCIETY

PURSUANT to notices issued, the annual meeting of the Canadian Society of Cost Accountants was held in the Windsor Hotel, Salon A, Montreal, Can., on Thursday, March 29, 1928, at the hour of 4 o'clock p.m.

PRESENT.—There were present—L. Belanger, James Turner, R. R. Thompson, C. E. Walker, T. C. Thorpe, T. S. Jardine, D. M. Farish, S. E. LeBrocq, G. C. Leroux, W. A. McKague. Mr. Belanger in the chair.

SECRETARY.—Moved by Mr. Jardine, seconded by Mr. LeBrocq, that W. A. McKague be appointed secretary of the meeting. Carried.

MINUTES OF LAST ANNUAL MEETING.—At the request of the Chairman, the Secretary read the minutes of the last annual meeting.

Moved by Mr. Turner, seconded by Mr. Thompson, that the minutes be adopted. Carried.

REPORTS OF PRESIDENT AND TREASURER.—The Chairman then presented the report of the Board.

The Chairman also read the report of the Honorary Treasurer.

Moved by Mr. LeBrocq, seconded by Mr. Thompson, that the Treasurer's report be adopted, subject to audit, and that it be published. Carried.

Moved by Mr. Farish, seconded by Mr. Jardine, that the President's report as read be embodied in the minutes. Carried.

EXAMINATION PLAN.—The Chairman outlined the progress of the examination plan.

Moved by Mr. Jardine, seconded by Mr. Leroux, that the Examination Plan as printed in January "Cost and Management" be approved, subject to such changes as may be decided upon during the year. Carried.

Moved by Mr. Turner, seconded by Mr. Farish, that Article 11 of the By-laws read as follows:—"That the Board be empowered to hold examinations and to issue certificates of efficiency." And that the present Article 11 be Article 12. Carried.

ANNUAL MEETING OF THE SOCIETY

CONSTITUTION AND BY-LAWS.—Moved by Mr. Turner, seconded by Mr. Walker, that the Director of Constitution and By-laws appoint a committee for the revision and publication of the by-laws. Carried.

EXAMINATION PRIZES.—The President offered an annual prize of \$15 for the most successful candidate at the Senior Examinations, and a prize of \$10 for the most successful candidate at the Junior Examinations.

Two prizes of \$25 and \$15 respectively for papers on Junior subjects during the 1928-29 session are also offered by a party who desires his name withheld.

Moved by Mr. Farish, seconded by Mr. Turner, that these offers be gratefully accepted. Carried.

FINANCES.—Moved by Mr. LeBrocq, seconded by Mr. Walker, that the question of Fees and Expenses and Chapter Finances be referred to a committee to be appointed by the President. Carried.

ELECTION OF OFFICERS.—The Chairman reported the following nominations as directors of the Society by the respective Chapters:

Toronto—James Turner, H. E. Guilfoyle, G. H. Houston, T. S. Jardine, C. H. Black, H. T. Jamieson, A. B. Shepard; and ex-officio, J. E. Carruthers and D. C. Patton.

Montreal—L. Belanger, D. M. Farish, F. Fernie, L. P. Lortie, R. R. Thompson, C. E. Whitten; and ex-officio, G. C. Leroux and L. A. Peto.

Hamilton—R. E. Love, M. I. Long; and ex-officio, S. E. LeBrocq and G. E. F. Smith.

Moved by C. E. Walker, seconded by R. R. Thompson, that nominations be closed and the secretary be requested to cast one ballot for the election of these officers. Carried.

The Chairman announced these directors as duly elected for the ensuing year.

Moved by Mr. Jardine, seconded by Mr. Farish, that Fred Page Higgins and C. H. Pelling be appointed auditors. Carried.

SUGGESTIONS.—The following suggestions were referred to the incoming Executive:—

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That the Chapter chairmen be asked to select directors to attend to different activities.

That the editorial committee be continued, and that it consider the publication of advertisements.

That an effort be made to secure a more suitable name for the Society.

That establishment of a Bureau of Research and of Tribunals of Commerce be considered.

ADJOURNMENT.—There being no further business, the meeting adjourned.

Executive Secretary,
W. A. McKAGUE.

Chairman,
L. BELANGER.

Handling Supplies in a Lithographing Plant

By C. E. WIGLE

Howell Lithographing Co., Ltd., Hamilton

(Before the Lithographers' Meeting, Toronto, March 26, Organized by the Canadian Society of Cost Accountants)

NO doubt every plant represented here to-day has a similar yet vastly different method and routine for the handling of their materials, etc. In giving this paper I am merely outlining the procedure in our own plant and hope that from the discussion to follow we will all get pointers on how to improve or simplify our systems as they now are.

One of our first problems is of course the human element. Our stock clerk should be one who is accurate and who watches his stock like a bank teller watches his cash. He should think of a pound of paper or ink as so many dollars and cents rather than as just paper and ink, etc.

Of course the storing and handling of materials is dependent on the size and layout of your plant. We all know paper and cardboard should be kept in a good dry storeroom and the temperature should be as nearly as possible the same as the press room. One of our greatest difficulties to-day is the effect of the climate on paper, etc.

HANDLING SUPPLIES IN A LITHOGRAPHING PLANT

Many plants have paper conditioning machines which they put all their paper through before it goes to press, and eventually we will all have to have these. The alternative is to hang this paper in racks to give it a chance to air and become climatized so to speak.

Unfortunately for the litho. industry to-day, with customers demanding deliveries the day after placing their orders, we are forced to carry larger stocks than previously to overcome the hazards of running green stock. In doing this, we have to keep closer watch than ever on our stocks first, to see we have plenty on hand and, second, to see that what we have is properly handled and accurate records of it kept. Many sheets of cardboard and paper can be wasted through careless handling. We should all keep a very close check to see that the stocks we are carrying are being used, otherwise they not only deteriorate, but we will have valuable cash tied up which can be used to advantage otherwise.

In this connection, there have been suggestions lately of getting the paper mills to carry certain stock sheets in rolls of suitable width for the trade in general. I trust this matter has not been dropped, as it would be a great help to all of us if one could get seasoned paper in a rush. I am sure by a little study, sizes could be worked out that would suit all of us.

As for the disposition of materials and supplies, probably the best way to illustrate this would be to follow them through our plant.

In making out the order we show on our copies whether it is for a special job or for stock. Thus the stock clerk knows what to do with the material when it comes in. There are two copies made of this, one for the office and one for the stock clerk. These orders are checked from day to day to see that the mills are delivering in the time specified.

When the invoice comes in a copy without price is sent to the stock clerk, the price and quantity are checked with the office copy of the order, and the actual quantity received is checked by the stock clerk with his copy of order and invoice.

The quantity being correct, the items are entered in the stock clerk's stock book, but before it is entered in the office book all extensions are checked and all extra charges added to the invoice, so that in the office stock book the price

COST AND MANAGEMENT

on that material will be the net cost, including all extra charges, such as trimming, casing, freight, cartage and sales tax, if any. Both the stock clerk's and the office stock book should show all materials received and issued and the balance on hand, so that we have a continual record of the stock on hand.

Of course in the general ledger will be the necessary accounts to charge these invoices to, such as paper account, board account, ink, miscellaneous materials and supplies, and this account is noted on the invoice, so that the wrong account will not be credited when the requisition for material comes in.

Outside of the board and paper, which is generally in wrappers or cases, all the other materials and small supplies are kept under lock and key in the store room, and each stock clerk should be made to realize that all materials he is in charge of represent so many dollars and cents to the company. This is a point that should be driven home by all of us, that if material or supplies are wasted or stolen, it is exactly the same as throwing away cash or stealing cash from the cash box. The banks would not let any of us have money without a signed check, so why should your stock clerk let anything out of his store rooms without a signed requisition for it? All requisitions should be signed by the superintendent or the foreman of the different departments, and should correspond exactly with the amount of material issued. These requisitions should show on them kind and quantity of materials required, the job number for which they are to be used, or the department and machine number on which they are to be used.

When the material called for has been issued, it is marked off the stock clerk's book and note made on the requisition of the balance in stock according to his books. The requisition is then sent to the office, where it is priced and the quantity marked off the stock book, and the balance checked with the balance shown by the stock clerk. The requisitions for materials are immediately entered on the job cost sheets to the jobs for which they are issued, and at the end of the month the total of the material requisitions is charged to work in progress and credited to board, paper, ink, etc. The supplies requisitions are totalled at the end of the month and charged to the different departments and credited to supplies. All of these requisitions are checked

HANDLING SUPPLIES IN A LITHOGRAPHING PLANT

as to price and extensions to avoid errors in the cost of the job as well as in the inventories.

There are some items which are impossible to requisition out as used, such as oils, carborundum or graining sand, glue, padding gum, etc. In these cases the departments are charged with the barrel or bag when they get it, and not necessarily as they use it.

The ink account is handled slightly different from the others in that it requires two requisitions, one when the foreman takes the tin or tins from the store room and a second for the quantities used on specific jobs. This account is the hardest of the lot to keep accurate, due to loss through ink sticking in the cans and drying up. It must be watched very closely.

If the foregoing procedure is carried out and done correctly, there is no reason why, when we take our actual inventory, there should be very great difference between it and our book inventory. I hope in the discussion to follow we will all get points which will help us out in our handling and disposition of materials and supplies.

SPECIAL MEETING WITH LITHOGRAPHERS

THE Society held a meeting in the King Edward Hotel, Toronto, on Monday, March 26th, for the discussion of cost work in the lithographing field. The attendance was twenty-five, including representatives of a good part of the lithographing industry. The meeting was an experiment on the part of our Society, and may be followed by meetings of a similar type for other industries as well as lithographing.

James Turner, C.A., Vice-President of the Society, took the chair at the morning session, when J. E. Carruthers, of our Toronto Chapter, gave an informal talk on cost accounting in general, which was much appreciated by all those present. Following luncheon, T. S. Jardine presided in the afternoon, and representatives of the lithographing industry led the discussion. L. Rhodes, of the Consolidated Lithograph Manufacturing Co., Ltd., Montreal, read a paper entitled "The Cost Accountant and His Field in the Lithographing Plant," while C. E. Wigle, of the Howell Lithographing Company, Ltd., Hamilton, spoke on "Storage, Handling and Distribution of Supplies." In the subsequent

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discussions several other phases of the industry were covered. Copies of these two papers are available for printing in Cost and Management. In the subsequent discussion several other phases of the industry were covered.

Those present at the meeting included:—Jas. Turner, T. Eaton Co., Ltd., Toronto; G. H. Houston, Rolph-Clark-Stone, Ltd., Toronto; T. S. Jardine, United Drug Co., Ltd., Toronto; J. E. Carruthers, Durant Motors of Canada, Ltd., Leaside, Toronto; L. Rhodes, Consolidated Litho Mfg. Co., Montreal; H. Douglas, Federated Press, Ltd., Montreal; M. Close, Duncan Lithographing Co., Ltd., Hamilton; E. B. Thompson, Duncan Lithographing Co., Ltd., Hamilton; M. Campbell, Montreal Lithographing Co., Ltd.; Mr. Greene, Montreal Lithographing Co., Ltd.; M. Shaw, London Printing & Lithographing Co., London; Miss Ross, London Printing & Lithographing Co., London; Mr. Tomlin, H. J. Jones-Sons, Ltd., London; C. F. Thomas, Richardson Bond & Wright, Owen Sound; A. C. Thompson, Thompson-Sons, Ltd., Toronto; W. C. Mills, Mortimer Co., Ltd., Ottawa; C. E. Wigle, Howell Lithographing Co., Ltd., Hamilton; F. L. Bungay, Rolph-Clark-Stone, Ltd., Toronto; T. A. Todd, Can. Lithographers' Association, Montreal; W. A. McKague, Canadian Society of Cost Accountants, Toronto; J. H. Harley and Mr. Wright, Wright Lithographing Co., Ltd., London; Mr. Lawson, Davis & Henderson, Ltd., Toronto.

Post-War Production Costs

By W. A. McKAGUE

*Executive Secretary, The Canadian Society of
Cost Accountants*

THE cost man, whether he be cost accountant solely or loaded in addition with the kindred duties of purchasing and production, has a legitimate interest in the outside markets for the things with which he deals. It goes without saying that you must sell your cost system to your executive. Will that not be so much the easier if your reports are directly linked with the other problems which are constantly in his mind?

Your costs, in fact, are controlled within the walls of your own plant to only a small extent. They are to a much larger degree determined by the time the worker reaches your employment office, and the raw materials reach your storehouse. So also your selling prices, as you are no doubt impressed from time to time, are very definitely limited by outside competition. Your concern is probably but a link in a chain which starts away back in the forest or the mine, and which often continues several stages further before the ultimate consumer is reached. Indeed production is rather

POST-WAR PRODUCTION COSTS

an endless process. Industries such as agriculture, mining and fishing are regarded as the most basic, and yet they use vast amounts of equipment which is the finished product of factories ordinarily considered as much further along in the line.

The cost accountant, and for that matter the purchasing agent or the production man, who confines his study to the relatively narrow margin, which is controllable within the walls of his own factory, will be responsible for his own handicap. Men who gain reputation and who rise to executive positions are noted for their insistent inquiry into pertinent facts which are far away from their own factories. Take the foreign exchange expert of one of our big banks. His margins are very small fractions, but his earnings may run into five figures, if he watches the basic factors which control the movements of the exchanges.

You cannot control the cost of materials and labour entering your plant at any particular time. But you can watch these broad trends and in some degree adapt your own operations so as to take advantage of favourable circumstances.

Plant Costs and Economic Costs

The cost man adopts a broad classification into materials, labour and overhead. A number of concerns in the same line can, by pooling such information, find their average costs. This is information that is generally of value. But no two industries are alike in the fundamental relations of materials, labour and overhead. A power plant is chiefly overhead and only slightly operating cost. In a flour mill or a sugar refinery it is the cost of the raw material that is heaviest. Methods of determining costs are more or less common to all, but it is evident that the actual cost data are not comparable.

Labour is in its nature the same, whether you are considering the actual labour on a particular job or the labour that goes into industry as a whole. The general trend of wages is pretty much the same in all lines, and the efficiency of labour is also subject to common factors. A comparison of the trend of your own labour costs with that of labour in industry as a whole should lead to conclusions of value.

In the case of materials the variations between costs for a particular industry and the trend of prices as a whole

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are pronounced. But unless some special factor develops, such as depletion of natural resources, you can generally figure that cost of materials will sooner or later swing in with the broad movement of prices. Anthracite coal has not come down nearly the same as other supplies, because the more accessible deposits are quickly being used up. Pulpwood is another material the cost of which will no doubt be permanently higher than in former days. But most things can be produced in proportion to demand. Rubber, for instance, temporarily fell short of the rapidly growing demand from the tire industry, but it took only a few years for the planters to meet this situation, and prices have again come down to a level which represents approximately the cost of production plus reasonable profit.

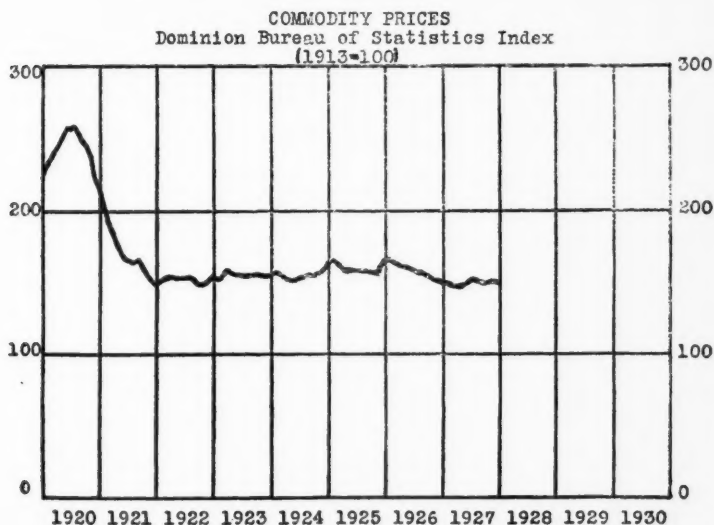
Overhead cannot be so readily generalized. It is possible to say just what items should be treated as overhead, but the importance of each varies greatly from industry to industry and from plant to plant. But a little analysis shows overhead to be made up of:—Labour, the cost of which will in the long run be subject to the same trend as is the cost of direct labour; equipment and other supplies, which are also likely to go up or down along with commodities as a whole; and capital, the cost of which, represented by interest, is in a separate economic class, but is also subject to measurement.

It is clear, however, that the cost accountant who seeks to watch economic trends must be prepared for some new classifications. Economists, enquiring into the nature of production in general, very much as the cost man analyses the cost of a particular article, decided that the instruments of production were labour, capital and land. Some radicals went further and claimed that the value of anything was due to the labour that went into it, and therefore represented merely the total amount or cost of such labour. This labour theory of value was not generally accepted, because it left too much to be explained away. In fact economists soon added a fourth factor in production—management, which puts the other three into active work, and which also explains the remarkable differences in success attained. Land, however, need not concern the cost accountant, for he is seldom if ever consulted until the land is acquired. Also, probably, a good part of the money capital is already converted into concrete and other fixed form, and therefore out

POST-WAR PRODUCTION COSTS

of his control. His principal interest will be in the trend of labour and materials. It is, happily, on these that economic data is most complete. As cost accountants have made progress in the grouping of their facts, so also have economists and statisticians achieved some success in collecting and arranging information which is, to business as a whole, what cost data is to the individual plant. The figures dealt with later in this article are all compiled from Canadian sources, mostly by Dominion Government departments. They are, therefore, directly applicable to Canadian problems.

The cost man will recognize how his own main items fit in with these general trends and be able to make some



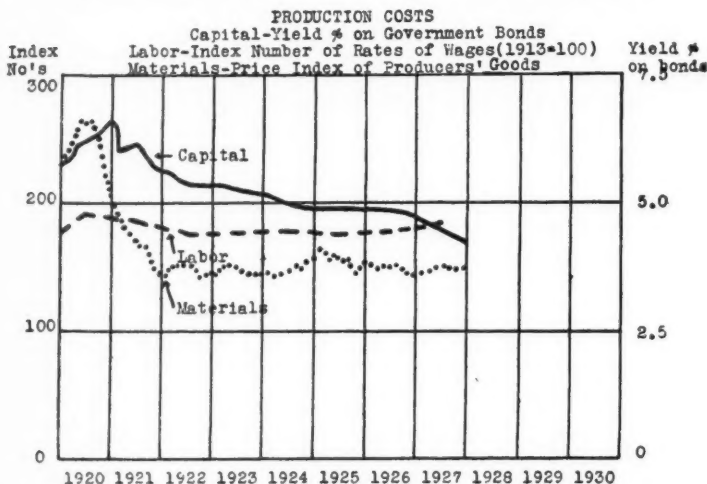
comparisons. In the case of labour there is a direct relation. Prices of commodities or materials correspond to prices of materials in a factory, and also to the part of overhead so constituted. Interest rates on capital are a guide to the tendency of that part of overhead.

Broad Movement of Production Costs

Just as the year 1920 was a crucial one in most lines of business, so also it marked a turning point in the economic

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world as a whole. For the economic world is no more nor less than the sum of all production and all consumption added together. The war was followed by a post-war market in which buyers of peace-time supplies competed with the still active demands of war, and prices reached a peak about midsummer of 1920. For many commodities the prices then touched were a high record for all time, while for other things they were duplicated or exceeded only at the invention stage. Average prices of commodities in Canada were approximately 250 per cent. of pre-war. The crash which followed brought them down, by the end of 1921, to 150 per cent. of pre-war. This decline of 40 per cent. is one of the most abrupt in all history. The fact that the

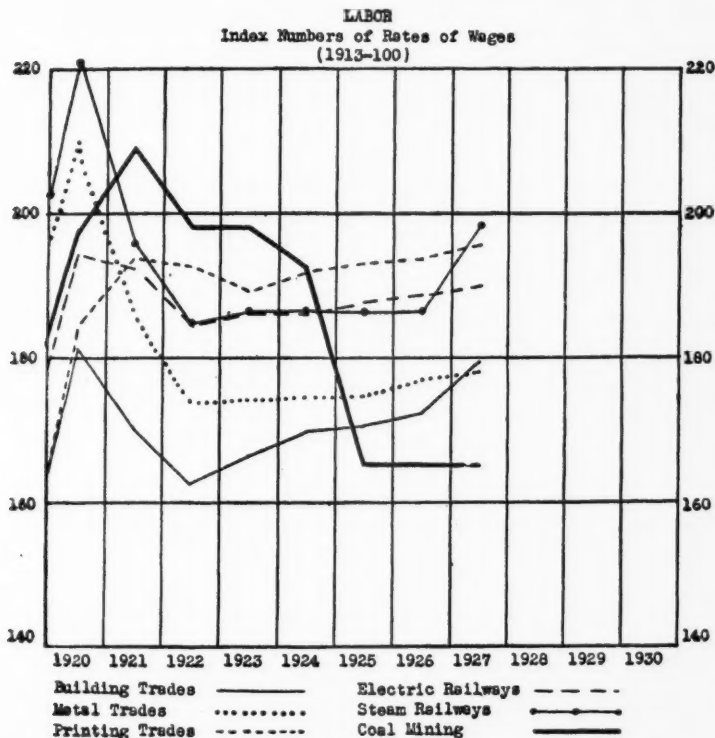


averages show little change from that time up to the present is indication of how thorough the reaction was—but it took considerably longer for industry to readjust itself to the new level. This movement of commodity prices is shown in the first chart herewith.

Throughout this period, of course, individual commodities and groups of commodities have fluctuated considerably. Wheat, cotton, sugar, rubber—these and many others have been up and down again. A chart of some of these against the general price trend would look like the Rocky Mountains, or, to be more up to date, like the English

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Channel to a tired swimmer. From the view point of the cost accountant, it is worth remembering that the basic commodities or raw materials show the widest fluctuations. A manufactured product is generally a composite, representing a variety of materials and of labour, and the overhead which does not change sharply; skilled and unionized



labour resists sudden change, while tariffs, trade agreements and other factors combine to stabilize the sale prices of merchandise. The bounties and the blights of nature have been very little modified, however, so the cost man, the purchasing agent, and the production superintendent must be prepared to adjust their figures at all times for sudden changes in the prices of raw materials so influenced.

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Main Economic Divisions of Costs

With this broad guide before us we may proceed to examine the cost of the instruments of production. These are indicated in the second chart, which constitutes a guide to the factors entering into industry as a whole. The stability of labour costs as compared with capital and materials is striking. The wage index, which, like that of commodities or materials, is based on 1913, did not decline so sharply because it had not gone up to nearly the same degree.

Since fixed capital, as before explained, cannot be treated in the abstract, about the only guide that is avail-

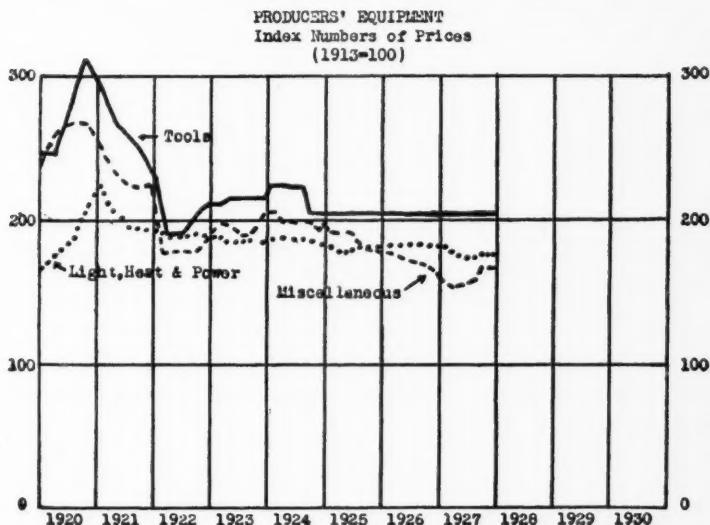


able is the prevailing interest rate on new borrowings. The line illustrates the yield on government bonds. This, of course, is below the cost of industrial capital, but the relation between the two is fairly constant, and the decline in interest rates on government loans from $6\frac{1}{2}$ per cent. down to $4\frac{1}{4}$ per cent. has been accompanied by a decline in interest on industrial capital from about 8 per cent. down to 6 per cent. or $5\frac{1}{2}$ per cent. So your overhead is thereby lessened, in so far as finances have been adjusted during this period. This applies to bank advances as well as to

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bonds and shares, though interest rates on bank loans do not change with the same freedom. The retirement of old bonds, bearing from 6 per cent. to 8 per cent. interest, and the issue of new ones, carrying 5 per cent. or 6 per cent., is a good illustration of how this works out.

The wages index shows the average trend for a group of trades. Details of these are given in the third chart, and as this is all the suitable data that is available on wage rates it may be referred to briefly here. It will be noted that in the third chart the scale has been greatly exaggerated in order to distinguish the lines. Wages in the build-

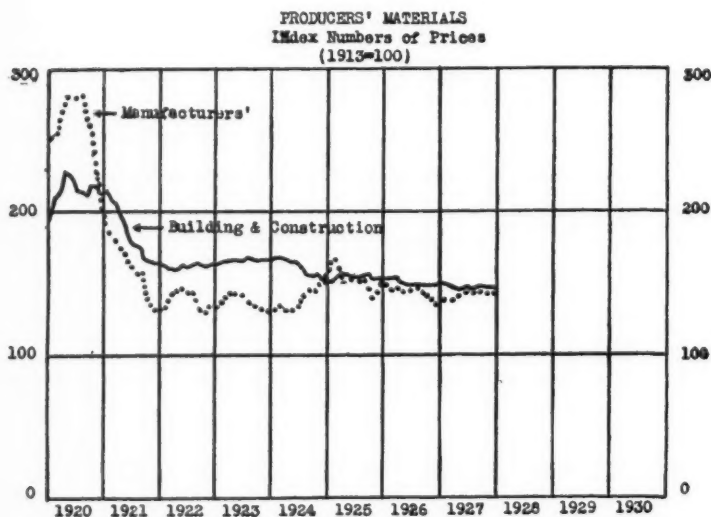


ing trades, metal trades and steam railways went down sharply from 1920 to 1922. The builders have since regained their moderate level of 1920, however, while the metal workers and the railway men have not got back near the high peaks they had then reached. The coal miners, due to strikes and other special factors, had their best days in 1921, but have since then hit the bottom so far as this comparison is concerned. The printers alone practically held their ground, and the electric railway men had a relatively small set-back. The ends of the lines, in 1927, represent the averages of wages in that year as compared with 1913.

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It will be observed that the steam railway employees and the printers have made the biggest net gain. They have nearly doubled their wages of 1913, while even the coal miners are a good 60 per cent. ahead. Thus with commodity prices only 50 per cent. ahead, labour is better off than it was before the war. Converted into terms of cost, labour is relatively dearer than it was before the war, in proportion to capital or materials. But in spite of that it may be cheaper, per unit of production, by being more efficient, or by being used more efficiently.

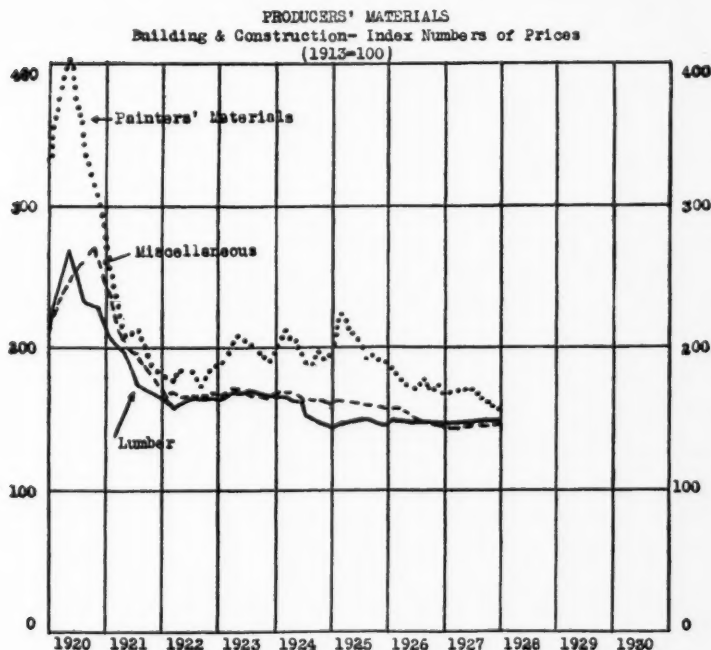
"Materials" is of great interest, and on these any degree of detail may be secured, since it is merely a matter



of getting and arranging price quotations. Since most commodities are used in production, relatively few being ready for the ultimate consumer, the majority of the commodities entering into the index in the first chart make up the "materials" index in Chart 2. Bearing out the point stressed above, however, that the basic commodities fluctuate the most, it is worth noting that the materials index shows slightly wider fluctuations than does the general commodity index.

POST-WAR PRODUCTION COSTS

Charts 4 to 9 merely show prices of materials or "producers' goods" in various stages of detail. It will be observed that as you get down to groups of allied commodities, or to individual commodities, the fluctuations are sharper, particularly with basic materials. Chart 4 shows producers' goods divided into equipment and materials (using the latter term in a narrower sense than formerly). In Chart 5 the equipment is shown in some detail. Equipment has been much more stable than materials; it did not rise so



high in cost, but has remained relatively high. The term covers machinery, tools, light, heat, power, etc. These items enter into nearly every factory industry, whether treated as part of overhead or as indirect charges on output. The maintenance of coal at very near its peak price is one illustration of a specific commodity. The average cost of equipment, it will be noted, remains about 75 per cent. above pre-war.

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In Chart 6 producers' materials are divided into two groups—those used in building and those used in manufacturing. Builders' materials back in 1920 reached only a moderate height, because values of property were more limited than were the prices obtainable for manufactured goods, but the severe adjustment in manufacturing brought the two groups into line again at less than 50 per cent. above pre-war.

PRODUCERS' MATERIALS
Manufacturers'-Index Numbers of Prices
(1913=100)

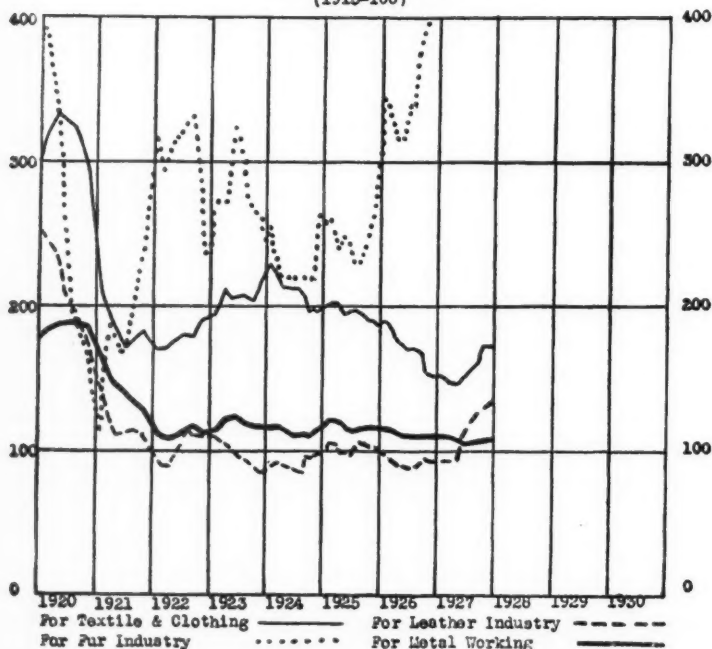


Chart 7 illustrates the principal items in builders' materials. Painters' materials were exceptionally high because the war interfered with the supply of chemicals, but in later years these have become again available, or substitutes have been developed.

Charts 8 and 9 give price trends of manufacturers' materials for different lines. These may be of interest to those engaged in the industries concerned.

POST-WAR PRODUCTION COSTS

Average Costs 50 Per Cent. Above Pre-War

Making a direct comparison of conditions in 1927 with those in 1913, it is found that interest rates on capital are about the same, materials are approximately 50 per cent. higher, and labour 85 per cent. higher. The changes expressed in the form of index numbers are as follows:—

	1913	1920	1927
Interest	100.0	150.0	100.0
Labour	100.0	190.0	185.0
Materials	100.0	250.0	150.0
Average	100.0	196.6	145.0

These are round figures, but they illustrate the general trend. In the averages above the three items are given equal weight. This is hardly likely to be the case in any one plant, though there are many in which something like these proportions are found.

A concern which can refund its debts at the prevailing rates can evidently reduce this item in its costs to the pre-war level. Those which are chiefly concerned with labour are evidently handicapped, unless they have reduced their labour costs in other ways, or are able to command prices for their products which are higher than the average level of commodities.

Prospects for the Future

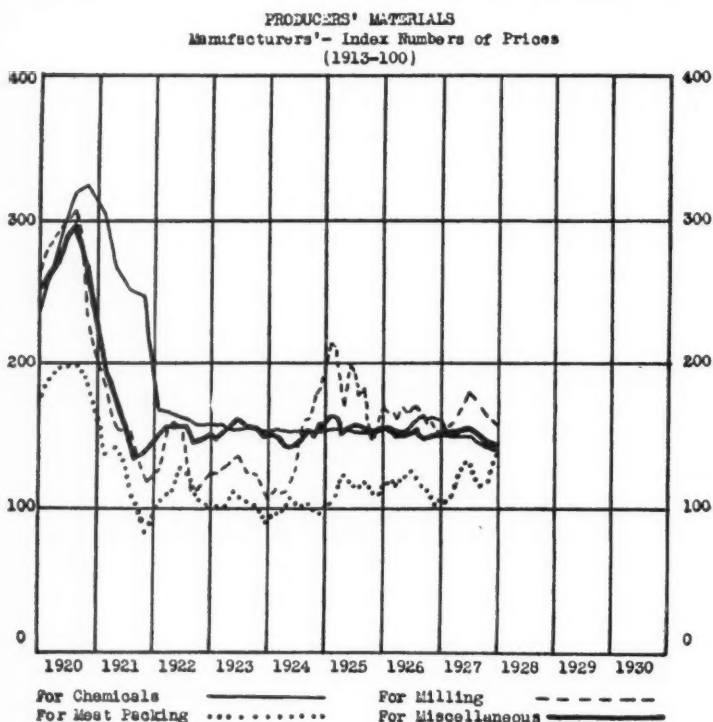
The trend of these factors in the future cannot be foretold, any more than can the future of particular costs. But in both cases the careful observer can draw useful and valuable conclusions from the movements which are found to be taking place.

With interest rates it might be said that these, having wiped out the entire advance of the war period, might remain where they are. There is really no basis for such a conclusion; in fact it seems more likely that the broad movement will continue until some new factor arises. In times of peace and prosperity capital grows at a very rapid rate. With the improvements in organization and in efficiency that are being constantly introduced this pace seems to be actually increasing. The war wiped out hundreds of billions of dollars of wealth, yet this ground, as measured by interest rates, has been fully regained within a decade.

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Labour costs are the item which, as already shown, move the slowest. So long as business continues good there seems no prospect of this item coming down. In fact labour is now getting part of the share that formerly went to capital, and may continue to do so if capital becomes still cheaper.

Materials are at once the products of industry and also an element of cost. Sales prices are not determined by



merely adding together costs, however. They are limited by sales competition, and costs have sooner or later to be hammered down to a level which will permit of a normal profit. Once in a while we have the reverse process—sales prices rising through excess of demand. Costs are never slow to respond to such an opportunity, and the ease with which they can rise is well known.

POST-WAR PRODUCTION COSTS

While wages may not go down, labour costs may be steadily reduced. High priced labour in the big industries of the United States is to-day successfully competing with the cheap labour of Europe. Cars, radios and other articles manufactured on this continent are being sold right into the markets of Europe. This surmounting of a wage handicap formerly considered insurmountable is due to large scale production, organization and efficiency. It has been proved that a skilled workman, operating a costly machine in a highly capitalized plant, may turn out enough product to undersell concerns not so well equipped, and still leave bigger wages for himself and a higher return on the capital invested. The rug which represented the work of a lifetime in Persia can be pretty well duplicated in a few hours' time in a modern factory.

Management, which is the fourth factor in production, is not an element of economic cost. The reward of management is the surplus realized after all costs have been met. The cost accountant is a part of the managerial force, and it is your job to help to create and increase that surplus.

Factory Overhead in the Stove Industry

By R. OATEN

Secretary, The Gurney Foundry Company, Ltd.

(Before Toronto Chapter, January 25, 1928)

IN order that our subject this evening, "Overhead as Applied to the Stove Business," may be more readily understood by those not connected with that branch of industry, I shall explain in a very few words what led up to the effort to establish a uniform cost system in the stove industry amongst a certain group of manufacturers.

Twenty-five or more years ago nearly all stoves were made of cast iron exclusively. The manufacturing operations consisted chiefly of moulding, drilling and other fitting or machining operations, and assembling or mounting. The finishing operation consisted of black-leading castings. There was very little trimming excepting some nickel-plated knobs and a nickel-plated strip along the front edge of the top, with an occasional nickel-plated medallion on the door.

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The cost system necessary to that kind of business was very simple, it could be figured on a poundage basis and the overhead could be a flat percentage on the total labour and material. From this elementary condition the sheet-iron stove was developed, and then a combination of sheet steel and castings, to which was added a considerable amount of nickel plated trimming. In more recent years there has been added vitreous enamelling to the trimming of a stove. This idea of trimming and extra finish has developed to such an extent that on electric ranges and gas ranges we are now finishing the main body and some of the inside linings with vitreous enamel, and colours are coming into the trim to such an extent that we shall soon have to employ artists to make sure the colours blend with the surroundings of the kitchen.

Any Cost Accountant can easily understand how very unsatisfactory a flat overhead percentage would be under the present conditions in the stove industry, yet up to two years ago there were a number of stove manufacturers in Canada doing business and attempting to find their costs by a record of materials and a record of direct labour, the total of which formed what they called the prime cost, to which was added a flat percentage for overhead. The consequence of this practice was, their highly trimmed sheet metal stoves were priced too low, while the plainer cast iron were priced too high in relation to the real cost.

With this general observation I will now endeavour to explain the principle on which the overhead or burden charge is compiled in some of the stove plants in Canada. Some of you have now in your possession a sheet of paper which is an example of what is used to accumulate different items of indirect costs and overhead charges for a period of one year or more, and from which is established percentages for each department as a loading or overhead charge on the direct labour of the department.

On the left hand side you will find the common names used for the different producing departments of the average stove factory. There are nine columns across the top of the sheet with headings, and the "X" marks in each square will indicate how this form is used in accumulating dollars and cents totals from a year's operation. You will notice there are one or two departments opposite which there is no X mark in the direct labour column. This is

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because we do not recognise any part of the labour in those departments as direct. On the other hand, there is a mark opposite every department in the indirect labour except in the first, known as the Cupola or Melting Department. This is one department whose labour does not get into an overhead percentage on a unit cost, the reason being that the foundry industry generally has kept for a number of years a record of what they call "cost of metal at the spout," and have always thrown into this the wages of the melter and the labourers tending the cupola and handling the pig iron and melting materials into the cupola. This had to be continued in order to have a system satisfactory to the majority on a uniform basis. For the same reason this system of costs had to be made as simple as possible because so many stove factories objected to have what they termed "a cost system," and it was necessary to work it into the routine of the time-keeping department. It was therefore decided that indirect labour would consist of every kind of labour around the shop, which could not be easily applied, either on a unit or a process basis, to a finished part or finished article. This explains why the labour in the cleaning room, sometimes known as the scratch shop in connection with the foundry, is classified as indirect labour even although it is actually productive labour.

Column three does not require much explanation excepting that "Indirect Materials and Supplies" is a term applied to all materials which cannot be weighed, measured or counted on a finished article. "Supplies" consist of small tools, grinding wheels, moulding sand and every other kind of supplies which are absorbed in the process of manufacture or are worn out in direct contact with the product. One example of the indirect material group might be cited as the nickel used in nickel plating. This is included in number three item opposite the plating and buffing department.

Column four does not require any particular explanation excepting that in the stove industry there are many different kinds of fuel used for purposes other than heating. For instance, in the core shop one stove plant may use coke as fuel in the ovens, another may use gas, another hard coal, and another fuel oil, but no matter what kind of fuel, it is considered as an indirect cost of that department. Some of you may not know the meaning of the word "core" in the

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foundry industry. It is the "baking business" of the moulding shop. A mixture of a special grade of sand, linseed products, resin and one or two other ingredients is mixed and moulded into a form exactly like the inside of a hollow casting. This is baked in a core oven and comes out like a hard cake, in order that it may support its own weight in the hollow of the sand mould and keep its shape long enough for the molten iron to form around it before the core commences to burn and disintegrate, thus leaving a hollow casting.

I am not going to try to explain every little detail in this system because if I attempted it we might be here all night. There may be some questions come up in the discussion following to bring out any necessary questions in the minds of those interested in this subject.

Column number five will be clear to any Cost Accountant, but at this point I will take the opportunity of explaining that this system does not throw all materials and supplies into one Stores Account in the general ledger. Direct material is broken up into several classes in order to simplify its control. Indirect material and supplies, etc., is split up into several accounts in the general ledger in order to avoid the tedious and expensive bookkeeping that would be necessary to charge all these little items each day or month to a particular department. There are supplies used, say, in the buffing department, peculiar to that department, which can be charged direct to it from the purchase invoice. This same principle applies to many of the departments. In order to prevent the burying of the use of materials for maintenance purposes, due to the neglect of any storekeeper or workman, we have an account in the general ledger known as Maintenance Materials, to which everything of that class is charged as it is brought in. Maintenance Material is a term applied to every kind of part or material necessary to repair any machinery or equipment that is worn out for any cause excepting direct contact with the product. Perhaps I can use a commonly used machine to illustrate this point. A drill press has a number of parts or attachments requiring attention. The drill wears out in contact with the product, therefore it is classified as number three, "I.M. & S." The chuck which holds the drill must be repaired or replaced, but it is classified as maintenance. The belt which operates the machine wears out and is classified

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DEPARTMENTAL AND GENERAL INDIRECT AND OVERHEAD CHARGES

Departments	1	2	3	4	5	6	7	8	9	Total % for Dept.
	Direct Labour	Indirect Labour	Ind. Mats. & Supplies	Power & Fuel Other than Heating	Maintenance or Repairs	Spoiled Work or Parts	% of 2-6 to 1 (D.L.)	6% Interest on Plant	Deprecia- tion	% of 7 & 8 to 1 (D.L.)
Cupola or Melting										Process cost
Core Shop	X	X	X	X	X	X	X	X	X	X
Moulding Shop	X	X	X	X	X	X	X	X	X	X
Cleaning Room		X	X	X	X	X	X	X	X	X
Drilling	X	X	X	X	X	X	X	X	X	X
Plating—Buffing	X	X	X	X	X	X	X	X	X	X
Plating—Polishing	X	X	X	X	X	X	X	X	X	X
Top Polishing	X	X	X	X	X	X	X	X	X	X
Press or Steel Room	X	X	X	X	X	X	X	X	X	X
Tin Shop	X	X	X	X	X	X	X	X	X	X
Japanning	X	X	X	X	X	X	X	X	X	X
Stove Mounting	X	X	X	X	X	X	X	X	X	X
Gas Mounting	X	X	X	X	X	X	X	X	X	X
Electric Mounting	X	X	X	X	X	X	X	X	X	X
Total Producing	X						% to 1 (D.L.)		% to Total (D.L.)	
Machine, Blacksmith	X	X	X	X	X	X	X	X	X	X
General Service or General Maintenance		X	X	X	X	X	X	X	X	X
Warehouse & Shipping		X	X	X	X	X	X	X	X	X

All figures to be obtained from a study of an entire year or yearly estimate.

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as maintenance. A spindle sometimes requires replacing, if there has been bad material or lack of lubrication, therefore cold rolled steel carried in stock for that purpose is classified as maintenance.

Number six, Spoiled Work or Parts, does not require a long explanation. It is sufficient to say that before this item of waste or cost was departmentalized we could get no one very much interested in it, but when the value of the spoiled work in any department is shown as a percentage against the direct labour of that department, it is not long before the foreman interested in excessive waste or spoilage is able to decrease it.

Column number seven will not meet up with the ideas of some Cost Accountants because they may disagree with the principle of charging interest into cost. I am not going to start an argument at this point.

Number eight, Depreciation, is a subject in itself, but you will see that this system recognizes it departmentally. You will see a department there about half way down the sheet known as the tin shop, in which there is very little machining, and what machining is there, is on comparatively inexpensive machines. The next item above is the press room, in which there are very many expensive machines and expensive dies. If these two items of overhead were not departmentalized but all thrown into one pot, we would be over-loading certain operations in the tin shop which only apply to one or two of our products, and the whole factory would be bearing an unfair proportion of these two items of overhead, made necessary by the existence of the press room, where sheet metal parts of stoves are formed at a very low direct labour cost but a high indirect cost. Notice the X marks in certain of the overhead columns opposite the last three items of this sheet,—I can save time by explaining this point only on two items—General Service, in the indirect labour column. This takes storekeepers, elevator men, sweepers and every other kind of labour not applying specifically to a producing department.

This same principle applies in every column opposite that item. When you get over into the maintenance, interest and depreciation columns, this line is used for overhead of that kind not accounted for in any producing departments.

FACTORY OVERHEAD IN THE STOVE INDUSTRY

One or two items of overhead are not clearly indicated on the form, but they are always taken into consideration when setting the burden rates for the plant. These are as follows:—

Factory Expense Supplies—This includes electric light bulbs, batteries, first aid supplies and lubricants of all kinds, excepting cutting compounds, which are considered I.M. & S. in the department where used.

Fuel for Heating—This requires no explanation amongst Cost Accountants.

Workman's Compensation and Public Liability Rates—As these are definite rates applied on labour, it would seem most logical to add these rates to direct and indirect labour in costs, but to simplify the system and make it more easily handled these rates are taken for the year and applied as percentage on total direct labour only.

Fire Insurance and Use and Occupancy Insurance—To be consistent, these should be applied departmentally in relation to the value of the machines in the department and the amount of stock carried in each department. The balance of the insurance, not taken care of departmentally, might be carried as a general overhead, but here again for the sake of accomplishing a uniform system, all insurance is applied as a general overhead on total direct labour.

Taxes—The same general remarks apply to taxes as to fire insurance, especially in localities where taxes are based on assessment of equipment in addition to that of land and buildings. However, in this particular system the taxes are carried as a general overhead on the total direct labour.

Salaries of Superintendent and Factory Office Staff—This overhead is applied on total direct labour.

The overhead or burden percentage is always worked out from the result of the study of a year's operations. It is never changed during the year excepting under unusual conditions.

The biggest single item of overhead in a stove factory is indirect labour, therefore this is the item we try hardest to control. To accomplish this there is a fortnightly analysis of the pay-roll, separating all wages departmentally, after dividing it departmentally into three categories, namely, piece work direct, day work direct and indirect labour. The pay office figures the relation of indirect labour to total direct labour of a department, and a careful ex-

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amination of this wages analysis sheet every fortnight will show the Plant Manager whether he is making any headway in reducing the indirect labour below our standard, which has been set up for the year on the overhead sheet. A similar control may be set up for every item of overhead expense by comparing the actual, as we go through the year, with the standard.

The standard burden rates are used as a basis for figuring unit costs of the product. These unit costs are in sufficient detail so that the office can see clearly how the total cost is composed of direct materials, direct labour, indirect labour, variable overhead and fixed overhead. You can readily understand that there might be some business contracts for export or any other highly competitive market in which it would be advisable to take some of it at a price which would fail to absorb any of our fixed overhead, but we go on the principle that no business is desirable unless it covers the prime cost and all the variable overhead. This is our main reason for figuring unit costs in such a way as to show up fixed overhead as a separate item.

By reference to the departmental and general indirect overhead sheet you will see how columns one to six inclusive are thrown together to arrive at a total percentage of these variable indirect and overhead charges departmentally against the direct labour of the department. Since that sheet was made it has been decided to show indirect labour on the cost sheet as a separate item, but the general principle is the same.

Columns seven and eight are considered as fixed overhead. The items on the lower part of the sheet following "total producing" naturally fall into either the variable or fixed overhead groups, excepting that we take fire insurance, taxes and factory office staff as fixed overhead no matter where it applies.

The inclusion of factory office staff in fixed overhead might be contrary to cost accounting principles, but here again we are simplifying the system by taking that item as fixed to partly offset the fact that in the producing departments we include in direct labour the wages of the foremen which, although somewhat variable, is something which goes on as an expense unless the plant is entirely closed down.

FACTORY OVERHEAD IN THE STOVE INDUSTRY

Everything I have said so far applies to the factory end of the business. We take the total manufacturing cost, which is the result of direct material, supplies, direct labour, indirect labour and all other factory overhead, and apply to this total cost percentages to cover sales and administration expenses of all kinds. Of course there is an analysis of sales and administration expense which I am not attempting to deal with to-night, it would be too controversial, but I shall be happy to attempt to answer any definite questions on that end of it.

Many of the subjects of our meetings so far this year have been so very well handled by the speaker that it has almost shut out any opportunity for question or discussion later. I am sure this little explanation of "Overhead as Applied to the Stove Business" will set up so many opportunities of picking out flaws that we shall now enjoy a very lively discussion, whether you are interested in the stove business or not.

CHAPTER NOTES

MONTREAL

The annual meeting of Montreal Chapter was held on February 23, and the following are the new officers:—

Chairman, G. C. Leroux, C.P.A., Assistant Inspector of Taxation; Vice-Chairman, L. A. Peto, Canadian Car & Foundry Co., Ltd.; Treasurer, C. E. Whitten, Canadian Paperboard Co., Ltd.; Secretary, D. R. Patton, C.A., R. Schurman & Company; Directors: J. E. Carpenter, 232 St. James St., Montreal; H. Kerrin, C.P.A., C.G.A., 392 St. James Street, Montreal; J. P. Masterson, Canadian Industrial Alcohol; L. Rhodes, Cons. Lithographing & Mfg. Co., Ltd.; C. V. Sifton, Northern Electric Company, Ltd.; Professor R. R. Thompson, McGill University; A. deTilley, 1192 St. Catherine St. E.

The following were appointed as representatives of the Montreal Chapter on the Dominion Board:

Lorenzo Belanger, C.P.A., C.G.A., 133 Crescent Street; D. M. Farish, C.A., Northern Electric Company, Limited; F. Fernie, A. R. Whittall Can Company; L. P. Lortie, Lortie, Dusfresne & Co.; Professor R. R. Thompson, McGill University; C. E. Whitten, Canadian Paperboard Company, and ex-officio; G. E. Leroux, C.P.A., Asst. Inspector of Taxation; L. A. Peto, Canadian Car & Foundry Company.

The following were nominated for the Dominion Examination Board:—Chairman, Professor R. R. Thomson, McGill University; Lorenzo Belanger, C.P.A., C.G.A., 133 Crescent Street; W. M. Carswell, Northern Electric Co., Limited.

The Montreal Press reported a "blizzard" on Friday evening, March 9th, but while the storm raged, a goodly number of our members were comfortably sheltered in the Arts Building of McGill, listen-

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ing to a very excellent paper. Mr. D. M. Farish, C.A., of the Northern Electric Company, Limited, and one of our best known and most popular members, spoke to the Chapter on "Standard Costs." Standard Costs and their operation in the Job Order and the Process Cost systems, were explained. The advantages were mentioned, special emphasis being laid on their value in detecting waste and inefficiencies in production, in dealing with either labour, materials or expense. Some discussion was caused by Mr. Farish's method of valuing the inventories, but settlement was favourable. Advance notice was given concerning our Annual Dinner, which is to be held on Thursday evening, April 12th. The principal speakers for that occasion will be Dr. L. E. Beaulieu, K.C., who will discuss "Trade Tribunals"; and Professor W. W. Goforth, B.A., who will deal with "St. Lawrence Developments."

Mr. L. Rhodes, Cost Accountant of the Consolidated Lithograph Manufacturing Co., Limited, spoke to our Chapter on Friday, March 23rd, on "The Field of the Lithographing Cost Accountant." In his paper, Mr. Rhodes showed the pressing need of closer co-operation in the industry to determine a uniform method of cost finding which would result in a stabilization of sales prices. He believed it to be the duty of the Cost Accountant to see that the Executive Officers receive the cost statements and interpret them in an intelligent manner so any necessary action may be taken immediately, and not when orders begin to fall off. Mr. Rhodes intimated a desire to have the Society visit the "Consolidated" plant during the next session.

TORONTO

Toronto Chapter brought its 1927-28 season to a rather abrupt but very successful close.

The regular meeting on March 7th was addressed by Mr. G. H. Houston, secretary-treasurer of Rolph-Clark-Stone, Ltd., and one of our prominent members. His subject was "Management Based on Facts." After sketching briefly the importance of proper records, Mr. Houston went into the question of what information should be supplied to foremen regarding costs in their own departments and in the business as a whole. He fathered a scheme which was so liberal as to draw criticism from many of those present, and provided one of the best discussions in our Chapter.

Due to early Easter and other considerations, the Toronto Executive decided to bring on its annual dinner on March 21st. Mr. Guilfoyle, who had been scheduled to speak at a regular meeting on that date, is due to take the platform a little later. The dinner was held in the Board of Trade dining room. There were over a hundred present, and the affair certainly was one of the most enjoyable in the annals of the Society. The Committee in charge had arranged for no less a speaker than Mr. C. L. Burton, general manager of The Robert Simpson Co., Ltd., and president of the Toronto Board of Trade this year. It was therefore a keen disappointment that Mr. Burton was taken ill just a few hours before our meeting. But his address was prepared, and was read by Mr. H. H. Bishop, of the same company, who also added a few comments of his own. So that, as Chairman Turner appropriately expressed it, we had the benefit of two minds. Mr. Guilfoyle was warmly supported when he expressed the thanks of the Chapter to Mr. Turner for the successful way in which he had conducted its affairs during the past season. Mr. Carruthers, the new chairman, was also called on for a few words. For entertainment, we had a good singer in the person of Mr. Percy David.

